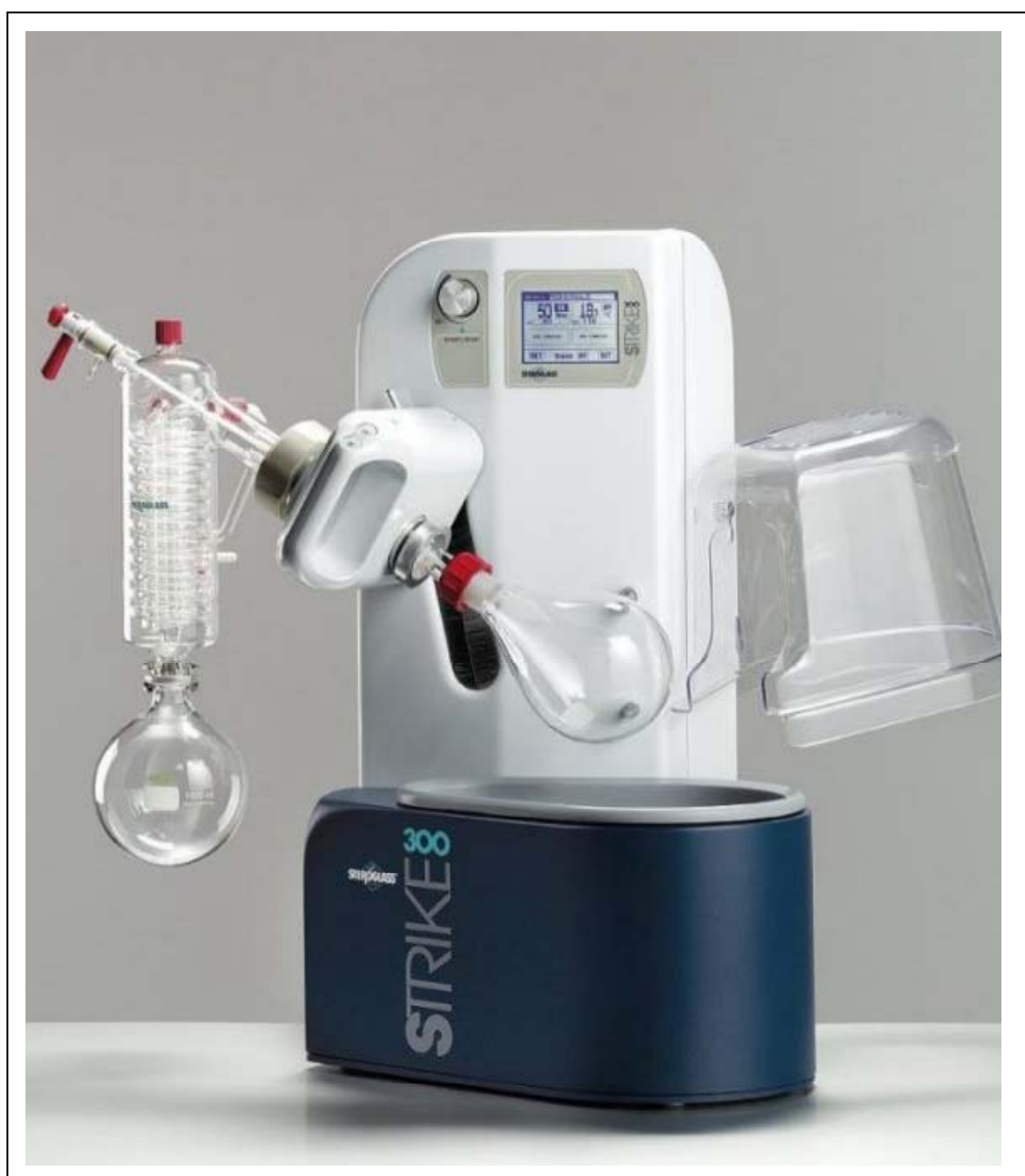


STRIKE300

Service Manual



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2 STRIKE300 GENERAL DESCRIPTION

2.1 GENERAL DESCRIPTION

The STRIKE300 rotating evaporator combines functional characteristics and high performance, thanks to its ergonomic design. The STRIKE300 is designed to comply with safety requirements in accordance with the directives on machine construction and electromagnetic compatibility.

Another new feature in the Steroglass rotating evaporator is the large, easy to read 320x240 touch screen graphic display and the multi-programmable microprocessor.

The evaporation flask is screwed onto the vapor line, guaranteeing extreme ease in assembly/disassembly operations..

The exclusive Steroglass mechanical seal system found in all STRIKE300 rotating evaporators is perfectly vacuum-tight, self-lubricating and anticorrosive, and thus maintenance-free. It requires no gaskets or other elements that can be deteriorated by solvents, and it is standard for all types of glassware.

The transparent safety hood, standard on all models, can be removed by the operator and set on the side of the instrument. The hood offers maximum protection against glassware breakage and sprays for both the operator and the work environment.

A motorized mechanism lifts the glassware.

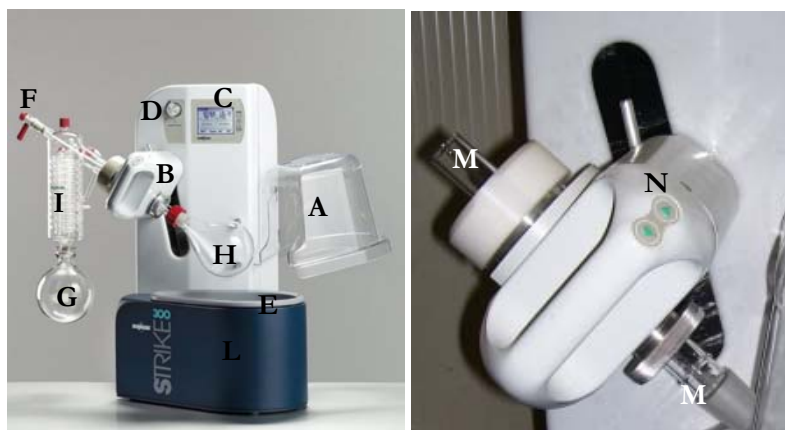


Fig. n. 1

LEGENDA	
A	Removable protective safety hood
B	Motorized glassware lifting system with safety release
C	Monochromatic 3.5" LCD display with touch screen
D	Rapid Start/Stop command and parameters selection
E	Removable thermostatic bath coated with PTFE
F	Vacuum valve
G	Collection flask
H	Evaporation flask
I	Chiller (available in the vertical, oblique or plasticized versions)
L	Thermostatic bath housing
M	Vapor line
N	Controls for lifting the glassware

2.2 SYMBOLS USED IN THIS MANUAL

Explanation of the symbols used in this document



ATTENTION

The ATTENTION symbol indicates the presence of a potential danger of personal injury. All the conditions indicated in the associated text must be completely known and understood before proceeding.



NOTE

The NOTE symbol indicates important information.

Boldface:

Boldface characters are used to emphasize the importance of an instruction or a procedure.

Icons:

The icons that appear in the left margin next to a given paragraph have special meanings and indicated special situations.

References:

Reference to a detail on the instrument, shown in a figure, is indicated in the following manner (example): Fig. 2-B. Thus the expression "Fig. 2-B" indicates detail B shown in Figure 2.

2.3 IMPORTANT SAFETY INSTRUCTIONS

To keep the unit in a safe state and to ensure safe operations, the following instructions must be carefully studied and fully understood before starting operating procedures.

Any interruption or loosening of the protective conductor inside or outside the unit or in connection with other units will cause a potential risk of electric shock that could result in personal injury.

The protective conductor must not be intentionally interrupted.

For operations to be performed with the instrument open to do attention to dangerous wires.

To guarantee continuous protection against fire risks, replace the electric power supply fuses only with fuses of the same type and size.

Observe safety rules and regulations and also the instructions for preventing additional accidents specified in this manual.



Do not place the instrument in damp areas and avoid direct contact with liquids.



Do not use the instrument with flammable and/or potentially explosive substances.



The manufacturer Steroglass shall not be responsible for any consequences that may derive from use of the STRIKE300 with explosive, flammable, toxic, hazardous or otherwise harmful substances.



Do not put the evaporation flask at room temperature into the bath when it is at temperatures near 185°C (bath filled with oil) to avoid thermal shock (in these cases start heating when the flask is already immersed).



Do not remove or modify the grounded electric plug. Use only outlets with a suitable grounding connection to avoid the danger of electric shocks.



Be careful of the moving parts and of the edge of the bath, which may cause burns if touched during evaporations at high temperatures.



Always use the safety hood during operation of the instrument. Remove it only in the case of disassembly or replacement of the evaporation flask and only after the liquids in the bath have been allowed to cool.



Make sure the liquid has cooled before removing it from the bath..



Any disassembly of the accessories must be done with the instrument turned off and the thermostatic bath empty.



Do not mix the diathermic oil with other liquids because it could impair the excellent thermal and oxidative stability of the oil, and it could also cause a change in its characteristics.



Use the diathermic oil exclusively for the applications provided for and according to the recommendations given on the manufacturer's safety data sheet.



Any use of the instrument not authorized by the manufacturer could make it unsafe.

2.4 CONNECTION



The left socket is for connecting the STRIKE300 to the Optional Vacuum Controller ST300, the center socket is for connecting the Optional PT100 probe for measuring vapor temperature and the right socket is for connection to the PC.



Instrument ON / OFF switch

Socket for connecting the instrument power cable

Socket for the thermostatic bath power cable

Socket for the thermostatic bath control cable

3 TROUBLESHOOTING

The following table gives a list of possible problems and their solutions.

GENERAL		
Problem	Cause	Solution
<i>The instrument does not start</i>	<i>The instrument may not be connected to the electric mains or the switch may be turned off</i>	<i>Check that the power cable is properly connected to both the mains socket and to the instrument.</i>
	<i>Input fuses blown</i>	<i>Disconnect the power socket, check the condition of the fuses, and replace if necessary with new fuses having the same specifications.</i>
<i>Touch screen does not work</i>	<i>Touch screen disabled</i>	<i>Enable the touch screen.</i>
	<i>Touch screen improperly connected or broken</i>	<i>Check the connection of the touch screen flat cable, or replace the display</i>
	<i>CPU board not working</i>	<i>Replace CPU board</i>
<i>The vapor line ring nut loosens during operation.</i>	<i>The set screw that locks the ring nut is not tight</i>	<i>Tighten the set screw that locks the ring nut</i>
<i>The vapor line ring nut does not unscrew.</i>	<i>The set screw that locks the ring nut is too tight</i>	<i>Loosen the set screw that locks the ring nut</i>

LIFTING		
Problem	Cause	Solution
<i>The instrument does not raise or lower the glassware</i>	<i>Lifting cord is loose</i>	<i>Tighten the lifting cord.</i>
	<i>Lifting cord is jammed</i>	<i>Release the lifting cord</i>
	<i>Lifting cord is broken</i>	<i>Replace the lifting cord</i>
	<i>Lifting motor fuse is blown</i>	<i>Replace fuse</i>
	<i>Lifting motor is broken</i>	<i>Replace the lifting motor</i>
	<i>Power supply board is broken</i>	<i>Replace the board</i>
	<i>Lifting pushbutton panel is broken.</i>	<i>Replace pushbutton panel</i>
<i>The instrument does not lower the glassware all the way down.</i>	<i>End stop set in high position.</i>	<i>Lower the mechanical end stop NB: Be careful to avoid having the flask strike the bottom of the thermostatic bath</i>
<i>The instrument raises or lowers the glassware slowly.</i>	<i>Lifting cord is loose</i>	<i>Tighten the lifting cord.</i>
	<i>Lifting motor is broken</i>	<i>Replace the motor</i>

ROTATION		
Problem	Cause	Solution
<i>The evaporation flask does not rotate.</i>	<i>Motor is overheated</i>	<i>Let the motor cool down for a few minutes, then try again. Check the current going through the motor, and the seal load.</i>
	<i>Motor is broken</i>	<i>Replace the rotation motor</i>
	<i>Power supply board is broken</i>	<i>Replace the board</i>
	<i>Encoder for reading rotation speed is broken</i>	<i>Replace the rotation encoder board</i>
<i>The instrument rotates the evaporation flask at maximum speed.</i>	<i>Power supply board is broken</i>	<i>Replace the board</i>
	<i>Encoder for reading rotation speed is broken</i>	<i>Replace the rotation encoder board</i>

The rotation of the evaporation flask is irregular.	Vacuum seal load is irregular	Check the seal load.
	Worm screw or worm gear damaged	Replace worm screw or worm gear.

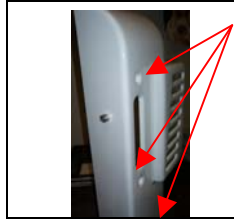
HEATING		
Problem	Cause	Solution
The instrument is not able to reach the setpoint temperature.	Heater broken	Replace the thermostatic bath tank complete with heater
	Heater control broken	Check the thermostatic bath board and/or CPU board
	Reaction inside the flask that absorbs too much heat	Slow down evaporation
	Overtemperature protection broken	Replace the overtemperature protection (bimetallic safety strip)
Heater breakdown warning message appears (the setpoint temperature is not reached in the maximum time established)	Excessive evaporation of the liquid inside the bath	Check to see if a setpoint higher than 90°C has been set and if the thermostatic bath is full of water. For temperatures over 90°C oil is needed.
	Overtemperature protection broken	Replace the overtemperature protection (bimetallic safety strip)
	Heater broken	Replace the thermostatic bath tank complete with heater
	Heater control broken	Check the thermostatic bath board and/or CPU board
The instrument goes beyond the setpoint temperature.	Heater control broken	Check the thermostatic bath board and/or CPU board
The instrument does not detect the presence of the thermostatic bath.	Thermostatic bath power or control cable not connected	Check connection of the cables
	Thermostatic bath board is broken	Replace the thermostatic bath board
	CPU board is broken	Replace CPU board
The instrument does not display the temperature of the thermostatic bath.	Thermostatic bath power or control cable not connected properly	Check connection of the cables
	Thermostatic bath board is broken	Replace the thermostatic bath board
	CPU board is broken	Replace CPU board
The instrument displays an incorrect thermostatic bath temperature.	Temperature probe out of calibration	Do calibration procedure
	Thermostatic bath power or control cable not connected properly	Check connection of the cables
	Thermostatic bath board is broken	Replace the thermostatic bath board
	CPU board is broken	Replace CPU board
Overtemperature warning message appears	The instrument detects a bath temperature higher than the setpoint	Check to see if a setpoint has been set that is lower than the current bath temperature.
	The instrument detects a bath temperature higher than the maximum limit of 185°C	Check the functioning of the CPU board, and thermostatic bath board
Heater breakdown warning message appears	The setpoint temperature has not been reached in the maximum time established	Check to see if a setpoint higher than 90°C has been set and if the thermostatic bath is full of water. For temperatures over 90°C oil is needed.
	Overtemperature protection broken	Replace the overtemperature protection (bimetallic safety strip)

<i>When starting the instrument, thermostatic bath disconnected warning message appears</i>	<i>Thermostatic bath power or control cable not connected</i>	<i>Check connection of the cables</i>
	<i>Thermostatic bath board is broken</i>	<i>Replace the thermostatic bath board</i>
	<i>CPU board is broken</i>	<i>Replace CPU board</i>
<i>The instrument does not allow a setting of over 90°C</i>	<i>Bath type set to "H2O"</i>	<i>Set bath type set to "OIL"</i>
<i>"Thermostatic bath temperature incompatible with bath type" message appears</i>	<i>Bath type set to "H2O"</i>	<i>Set bath type set to "OIL" or lower setpoint below 90°C.</i>

VACUUM		
Problem	Cause	Solution
<i>The instrument does not detect the presence of the vacuum optional.</i>	<i>Connection defective</i>	<i>Check the electrical connection</i>
	<i>Optional board defective</i>	<i>Check and/or replace the vacuum optional board</i>
<i>A vacuum value over 1050 mbar is displayed even if in a vacuum.</i>	<i>Optional out of calibration</i>	<i>Repeat probe calibration.</i>
	<i>Optional board defective</i>	<i>Check and/or replace the vacuum optional board</i>
<i>A vacuum value of 0 is displayed even if the glassware is not in a vacuum.</i>	<i>Optional out of calibration</i>	<i>Repeat probe calibration.</i>
	<i>Optional board defective</i>	<i>Check and/or replace the vacuum optional board</i>
<i>Vacuum level set cannot be reached.</i>	<i>Control OFF</i>	<i>Enable vacuum control</i>
	<i>Vacuum leaks in the instrument</i>	<i>Check the pneumatic connections, or the vacuum seal, or the vapor line O-ring.</i>
	<i>Pump insufficient (or evaporation too violent)</i>	<i>Increase pump capacity</i>
	<i>Leaks in the controller</i>	<i>Check the pneumatic connections of the vacuum optional</i>
	<i>Broken valve</i>	<i>Replace vacuum optional valve</i>
<i>The vacuum falls below the setpoint value</i>	<i>Pump capacity too high for the volume of the glassware.</i>	<i>Change vacuum pump, or lightly choke the hose coming from the pump</i>
<i>The vacuum goes back up too quickly</i>	<i>Vacuum leaks in the instrument</i>	<i>Check the pneumatic connections, or the vacuum seal, or the vapor line O-ring.</i>
	<i>Evaporation too violent</i>	<i>Increase pump capacity</i>
<i>The vacuum reaches the setpoint and then goes back up too high.</i>	<i>"Delta" set too high</i>	<i>Set the "delta" to a lower value</i>

4 DESCRIPTION OF OPERATIONS

4.1 OPENING THE REAR HOUSING



Disconnect the instrument from the power socket, and remove all instrument connection cables. Release the housing by removing the three 4x20 Phillips oval head screws and the three washers from the holes, and remove the housing by pulling it toward the back and rotating it clockwise on the vertical axis (toward the evaporation flask).

Be careful not to damage the silicone seal.

4.2 CLOSING THE REAR HOUSING

Fit the rear housing to the front housing, inserting the silicone seal in the slot between the two housings, so that it disappears inside them. Fasten the rear housing inserting the three 4x20 Phillips oval head screws and the three washers in the holes (*see preceding figure*). Connect all the cables disconnected when opening, and connect to the electric power socket.

4.3 TOUCH SCREEN ACTIVATION/DEACTIVATION

It is possible to work with the touch screen disabled, by turning on the instrument in the following manner: hold down the Rapid Start/Stop command and at the same time switch the main switch at the rear of the instrument to ON. The video cursor may be moved from one square to another by rotating the Rapid Start/Stop command; the highlighted square may be selected by pressing this command.

To reactivate the touch screen, browse in the menu entering “settings”, select touch screen “ON” and confirm.

4.4 DISPLAY REPLACEMENT



Open the instrument following the instructions given in paragraph 4.1.

Disconnect the cables from the CPU board.

Remove the CPU board by unscrewing the four screws shown in the figure (*central in a horizontal direction*).

Set the CPU board on a smooth, clean work surface with the display facedown, being very careful not to damage the touch screen integrated with the display.



Disconnect the ffc cables of the display and touch screen.

Remove the display by unscrewing the four nuts that fasten it to the CPU board.

Attach the new display to the CPU board.

Reconnect the flat ffc cables to the connectors. NB: be very careful not to bend too much the touch screen cable.


Reattach the CPU board to the instrument and reconnect all the cables to the board.





Connect the power cable to the instrument, turn the instrument on and check that the display and the touch screen are working properly. If everything is working right, turn off the instrument, disconnect the power cable, and reattach the rear housing as described in paragraph 4.2.

Calibrate the touch screen as described in the paragraph “TOUCH SCREEN CALIBRATION”



4.5 CPU BOARD REPLACEMENT

	Carry out the same procedure necessary for replacement of the display described in paragraph 4.4, but install a new CPU board.
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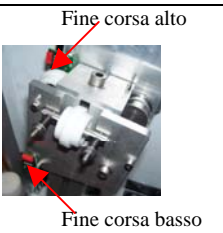

4.6 POWER SUPPLY BOARD REPLACEMENT

	Open the instrument following the instructions given in paragraph 4.1. Disconnect all the cables from the power supply board. Replace the power supply board by unscrewing the four fastening screws.
	Connect the power cable to the instrument, turn the instrument on and check that the display, the touch screen, lifting system, optionals (if present), and the USB connection are working properly. If everything is working right, turn off the instrument, disconnect the power cable, and reattach the rear housing as described in paragraph 4.2.



4.7 CONNECTORS BOARD REPLACEMENT

	Open the instrument following the instructions given in paragraph 4.1. Disconnect the flat cable from the connectors board. Replace the connectors board by unscrewing the fastening screws.
	Connect the power cable to the instrument, turn the instrument on and check that the optionals (if present), and the USB connection are working properly. If everything is working right, turn off the instrument, disconnect the power cable, and reattach the rear housing as described in paragraph 4.2.

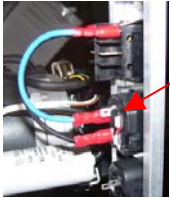

4.8 END STOP BOARD REPLACEMENT

	Open the instrument following the instructions given in paragraph 4.1. Disconnect the flat cable from the end stop board you wish to replace. Replace the end stop board by unscrewing the fastening screws. Set the sensor code (see below). NB <i>lower end stop: All to OFF except no. 4 to ON</i> <i>upper end stop: All to OFF except no. 3 to ON</i>
	Connect the power cable to the instrument, turn the instrument on and check that the lifting are working properly. If everything is working right, turn off the instrument, disconnect the power cable, and reattach the rear housing as described in paragraph 4.2.

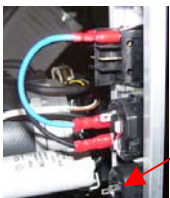

4.9 ENCODER REPLACEMENT

	Open the instrument following the instructions given in paragraph 4.1. Disconnect the encoder connector from the CPU board. Remove the encoder knob by loosening the set screw and pulling the knob perpendicularly from the plane of the instrument. Remove the spacer from the encoder axis and insert it on the axis of the new encoder. Replace the "encoder board" by unscrewing the four fastening screws. Reattach the encoder knob inserting it perpendicularly to the plane of the instrument and locking it in place tightening the set screw.
	Connect the power cable to the instrument, turn the instrument on and check that the encoder are working properly. If everything is working right, turn off the instrument, disconnect the power cable, and reattach the rear housing as described in paragraph 4.2.



4.10 REPLACEMENT OF POWER SOCKET WITH FUSE

	<p>Open the instrument following the instructions given in paragraph 4.1. Disconnect all the cables from the power socket. Replace the power socket.</p>
	<p>Connect the power cable to the instrument, turn the instrument on and check that the instrument are working properly. If everything is working right, turn off the instrument, disconnect the power cable, and reattach the rear housing as described in paragraph 4.2</p>


4.11 THERMOSTATIC BATH SOCKET REPLACEMENT

	<p>Open the instrument following the instructions given in paragraph 4.1. Disconnect all the cables from the thermostatic bath outlet. Replace the power socket.</p>
	<p>Connect the power cable to the instrument, turn the instrument on and check that the instrument are working properly. If everything is working right, turn off the instrument, disconnect the power cable, and reattach the rear housing as described in paragraph 4.2</p>


4.12 REPLACEMENT OF THE DIN OUTLET FOR THERMOSTATIC BATH CONTROL

	<p>Open the instrument following the instructions given in paragraph 4.1. Unsolder all the cables from the thermostatic bath outlet, taking note of the position of the various cables. Replace the DIN outlet and re-solder all the cables in their original positions, and protecting the soldering with heat shrink tubing.</p>
	<p>Connect the power cable to the instrument, turn the instrument on and check that the instrument are working properly. If everything is working right, turn off the instrument, disconnect the power cable, and reattach the rear housing as described in paragraph 4.2</p>




4.13 ENCODER ADHESIVE REPLACEMENT

	<p>Remove the old adhesive, clean the outside edge of the display (plastic where the adhesive goes) with alcohol, remove the protective material from the adhesive and attach the adhesive in place.</p>
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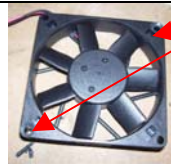

4.14 DISPLAY ADHESIVE REPLACEMENT

	<p>Remove the old adhesive, clean the outside edge of the display (plastic where the adhesive goes) with alcohol, remove the protective material from the adhesive and attach the adhesive in place, centering the transparent window of the adhesive with the visible area of the display.</p>
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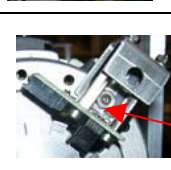

4.15 LIFTING KEYPAD REPLACEMENT

	<p>Disconnect the instrument from the power socket.</p> <p>Remove the handle from the rotation unit by unscrewing the two fastening screws (opposite sides).</p>
	<p>Disconnect the connector shown in the figure.</p>
	<p>Extract the adhesive keypad, clean the adhesive contact surface, insert the new keypad, remove the protective strip from the adhesive and attach the keypad firmly to the handle, pressing down to make it stick well.</p> <p>Connect the connector disconnected previously.</p> <p>Put the handle back in place and fasten with the screws.</p> <p>Connect the instrument power cable, turn the instrument on and check to see that it is functioning properly.</p>







4.16 ROTATION MOTOR FAN REPLACEMENT

	<p>Open the instrument following the instructions given in paragraph 4.1.</p> <p>Cut the electric fan power wires where the wires are joined.</p> <p>Remove the electric fan by unscrewing the two fastening screws shown in the figure.</p> <p>Take the new fan, and use a conical countersink to countersink the hole on the right of the where the cables come out on the front side of the fan, and its symmetrical hole, for a 4mm conical screw.</p> <p>Solder the fan's black wire to the brown wire and the fan's red wire to the white wire. NB: protect the soldering with heat shrink tubing.</p> <p>Fasten the fan to the two brackets with the two screws, at the countersunk holes, with the wires coming out toward the top; if necessary, adjust the optical fork of the encoder by prying the hexagonal turrets with a screwdriver so as to center the encoder over the fork opening. NB: make sure that the air flow is directed toward the motor (arrow on the side of the fan).</p>
	<p>Connect the power cable to the instrument, turn the instrument on and check that the instrument are working properly. If everything is working right, turn off the instrument, disconnect the power cable, and reattach the rear housing as described in paragraph 4.2</p>



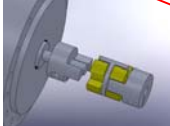

4.17 ROTATION ENCODER BOARD REPLACEMENT



	<p>Open the instrument following the instructions given in paragraph 4.1.</p> <p>Remove the cooling fan by removing the two fastening screws.</p>
	<p>Remove the metal plate to which the encoder board with the optical fork is fastened.</p> <p>Replace the encoder board with the new one.</p> <p>Attach the encoder board to the metal plate.</p> <p>Attach the metal plate to the rotation motor, making sure the encoder disk is centered with the optical fork.</p>
	<p>Connect the power cable to the instrument, turn the instrument on and check that the instrument are working properly. If everything is working right, turn off the instrument, disconnect the power cable, and reattach the rear housing as described in paragraph 4.2</p>

4.18 ROTATION MOTOR REPLACEMENT (*simple joint vers.*)




	<p>Open the instrument following the instructions given in paragraph 4.1. Remove the cooling fan by removing the two fastening screws. Remove the metal plate to which the encoder board with the optical fork is fastened. Remove the other metal plate from the rotation motor. Remove the encoder disk from the motor axle, unscrewing the two fastening screws.</p>
 	<p>Remove the motor unit from the vertical plate by unscrewing the four nuts behind the plate (part opposite the motor).</p> <p>NB: be careful of the elastomer (plastic part of the joint), which could fall.</p>
	<p>Remove the half-joint from the motor axle by loosening the set screw. Assemble the half-joint to the new motor so that the distance between the motor base and the upper base of the joint is 25.6 mm; fasten the joint by tightening the screw in the joint. Attach the motor unit to the vertical plate so that the condenser is turned toward the inside of the instrument, and making the half-joint fit together with the plastic part and with its respective opposite. Fasten the motor, tightening the four nuts and washers removed previously.</p>
	<p>Assemble the encoder disk to the axle of the new motor. Assemble the metal plate to which the encoder board has been fastened with the optical fork, centering the optical fork with the encoder disk. Attach the other metal plate to the rotation motor. Attach the cooling fan using the two fastening screws.</p>
	<p>Connect the power cable to the instrument, turn the instrument on and check that the instrument are working properly. If everything is working right, turn off the instrument, disconnect the power cable, and reattach the rear housing as described in paragraph 4.2</p>

4.19 ROTATION MOTOR REPLACEMENT (*double joint vers.*)


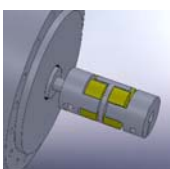

	<p>Open the instrument following the instructions given in paragraph 4.1. Remove the cooling fan by removing the two fastening screws. Remove the metal plate to which the encoder board with the optical fork is fastened. Remove the other metal plate from the rotation motor. Remove the encoder disk from the motor axle, unscrewing the two fastening screws.</p>
 	<p>Remove the motor unit from the vertical plate by unscrewing the four nuts behind the plate (part opposite the motor).</p> <p>NB: be careful of the elastomer (plastic part of the joint), which could fall.</p>
	<p>Remove the half-joint from the motor axle by loosening the set screw. Assemble the half-joint to the new motor, sliding the half-joint all the way down toward the motor; fasten the joint by tightening the screw in the joint. Attach the motor unit to the vertical plate so that the condenser is turned toward the inside of the instrument, and making the half-joint fit together with the plastic part and with the rest of the joint. Fasten the motor, tightening the four nuts and washers removed previously.</p>

	<p>Assemble the encoder disk to the axle of the new motor. Assemble the metal plate to which the encoder board has been fastened with the optical fork, centering the optical fork with the encoder disk. Attach the other metal plated to the rotation motor. Attach the cooling fan using the two fastening screws.</p>
	<p>Connect the power cable to the instrument, turn the instrument on and check that the instrument are working properly. If everything is working right, turn off the instrument, disconnect the power cable, and reattach the rear housing as described in paragraph 4.2</p>



4.20 JOINT ELASTOMER REPLACEMENT (*simple joint vers.*)



	<p>Open the instrument following the instructions given in paragraph 4.1.</p>
	<p>Remove the motor unit from the vertical plate by unscrewing the four nuts behind the plate (part opposite the motor). NB: be careful of the joint elastomer, which could fall. Replace the elastomer with the new one, and reattach the motor unit.</p>
	<p>Connect the power cable to the instrument, turn the instrument on and check that the instrument are working properly. If everything is working right, turn off the instrument, disconnect the power cable, and reattach the rear housing as described in paragraph 4.2</p>

4.21 JOINT ELASTOMER REPLACEMENT (*double joint vers.*)





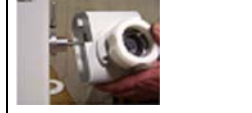



	<p>Open the instrument following the instructions given in paragraph 4.1.</p>
	<p>Remove the motor unit from the vertical plate by unscrewing the four nuts behind the plate (part opposite the motor). NB: be careful of the joint elastomer, which could fall. Take a new elastomer and drill a hole in the center of it with a 7mm bit, and couple it to the half-joint attached to the motor. Then couple the remaining double joint to the drilled elastomer (first the loose metal part, then the second elastomer), then reattach the motor unit.</p>
	<p>Connect the power cable to the instrument, turn the instrument on and check that the instrument are working properly. If everything is working right, turn off the instrument, disconnect the power cable, and reattach the rear housing as described in paragraph 4.2</p>



4.22 WORM SCREW REPLACEMENT

	<p>Disconnect the instrument from the power socket. Remove the handle from the rotation unit by unscrewing the two fastening screws (opposite sides).</p>
	<p>Disconnect the connector shown in the figure.</p>







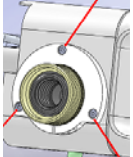
	<p>Unscrew the screw holding the worm in place and extract the worm, pulling it toward the outside. If necessary you can facilitate this by slightly rotating (by hand) the vapor line.</p> <p>Insert a new worm screw, sliding it all the way down, making sure that the worm screw locks in with the pin perpendicular to the rotation axis. If necessary you can facilitate this by slightly rotating (by hand) the vapor line.</p> <p>Fasten the worm in place with the screw on the motor axle.</p> <p>Grease the coupling if necessary.</p>
	<p>Connect the instrument power cable, turn the instrument on and check to see that it is functioning properly. If everything is working right, turn the instrument off, disconnect the power cable, and connect the connector disconnected previously.</p> <p>Insert the handle in place and fasten with the screws.</p> <p>Connect the instrument power cable, turn the instrument on and check to see that it is functioning properly (lifting and rotation).</p>




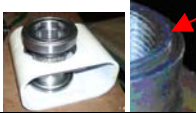

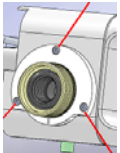




4.23 WORM SCREW REPLACEMENT

	<p>Detach the chiller from the instrument by unscrewing the ring nut.</p> <p>Open the instrument following the instructions given in paragraph 4.1.</p>
	<p>Remove the handle from the rotation unit by unscrewing the two fastening screws (opposite sides).</p>
	<p>Disconnect the connector shown in the figure.</p>
	<p>Unscrew the screw holding the worm in place and extract the worm, pulling it toward the outside. If necessary you can facilitate this by slightly rotating (by hand) the vapor line.</p>
	<p>Release the “rotation unit” from the instrument by unscrewing the three screws at 120° located at the bottom of the unit.</p>
	<p>Remove the “rotation unit” sliding it parallel to the motor axle.</p>
	<p>Remove the register for the tilt of the head by unscrewing it fully, being careful about the load spring.</p>
	<p>Remove the nuts, springs and washers fastening the motor mount, being careful about the springs.</p>
	<p>Having reached this point, the rotation unit mount is free to move.</p> <p>Manually lower the lifting system, applying force downward on the rotation motor, and at the same time lowering the lifting release lever.</p>

	<p>Pull out the rotation unit mount, sliding it first outwards to free it from the screws, then lift it above the rotation motor, then pull it toward the inside of the instrument, tilting it to facilitate its passing through the slot.</p>
	<p>Remove the spring pin and the seeger from the transmission shaft, and pull out</p>
	<p>Pull out the motor axle from the support, replace the bearings with new ones, and then proceed in reverse order to reassemble everything, being careful with the mechanical joint (if necessary, follow the assembly instructions in the following paragraph).</p>

4.24 WORM GEAR BEARINGS REPLACEMENT


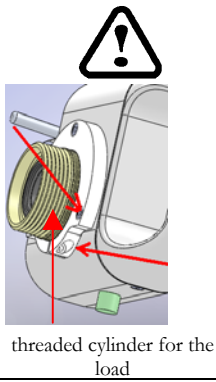
	<p>Disconnect the instrument from the power socket. Unscrew the set screw that prevents the metal ring nut from loosening, push the bottom shown in the figure and unscrew the metal ring nut.</p> <p>Slide the vapor line downward until it is extracted.</p>
	<p>Remove the handle from the rotation unit by unscrewing the two fastening screws (opposite sides).</p>
	<p>Disconnect the connector shown in the figure.</p>
	<p>Unscrew the screw holding the worm in place and extract the worm, pulling it toward the outside. If necessary you can facilitate this by slightly rotating (by hand) the vapor line.</p>
	<p>Release the “rotation unit” from the instrument by unscrewing the three screws at 120° located at the bottom of the unit.</p>
	<p>Remove the “rotation unit” sliding it parallel to the motor axle.</p>
	<p>Remove the three screws shown in the figure that fasten the flange. Unscrew the vacuum seal by <u>turning it clockwise</u>, being careful about the load spring.</p>

	Remove the rotation lock pin by pulling out the seeger that holds it in place. Be careful about the spring.
	Protect the outside surface of the “rotation unit” by applying protective tape. Remove the worm gear and the first bearing by sliding the worm gear toward the chiller, pushing on the worm gear in this direction. BE CAREFUL not to mar the paint on the “rotation unit”
	Remove the remaining bearing by sliding it toward the chiller, pushing on the worm gear in this direction. BE CAREFUL not to mar the paint on the “rotation unit”
	Take the first bearing and insert it in the hole with lip (smaller outside) passing it through the side opening.
	Insert the motor axle inside the bearing, with the side surface with step turned toward the larger hole (toward the top). Insert the other bearing over the axle
	Fit all together using a press until the two seeger s come into contact with the two bearings.
	Insert the spring in the lock pin as shown in the figure. Insert the lock pin in place and fasten it with the seeger .
	Take the seal, apply PTFE tape over the threading (if necessary), insert the load spring and tighten the seal all the way, <u>turning it counterclockwise</u> . Reassemble the seal lock flange tightening the three screws shown in the figure.
	Put the “rotation unit” in its position,
	and fasten in place tightening the three screws at 120° located at the bottom of the unit.
	Insert the worm screw, sliding it all the way down, making sure that the worm screw locks in with the pin perpendicular to the rotation axis. If necessary you can facilitate this by slightly rotating (by hand) the vapor line. Fasten the worm in place with the screw on the motor axle. Grease the coupling if necessary. Check the play of the mechanical coupling of the worm with the worm gear; if the play is greater than 1°, adjust it by loosening slightly the three screws at 120° located at the bottom of the “rotation unit”, and tightening or loosening the set screw above the “rotation unit”.
	Connect the instrument power cable, turn the instrument on and check to see that it is functioning properly. If everything is working right, turn the instrument off, disconnect the power cable, and connect the connector for lifting disconnected previously. Insert the handle in place and fasten with the screws. Connect the instrument power cable, turn the instrument on and check to see that it is functioning properly (lifting and rotation).

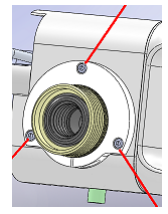
4.25 WORM GEAR REPLACEMENT

	Follow the steps in the preceding paragraph, replacing the worm gear instead of the bearings.
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4.26 CHECKING THE VACUUM SEAL LOAD

	Check the motor force, measuring the current that flows inside the rotation motor, following the instructions below.
	Open the instrument following the instructions given in paragraph 4.1. Disconnect the motor power cable from the power supply board, and insert in series the current tester.
 threaded cylinder for the load	NB: ATTENTION – risk of electric shocks! Connect the power cable to the mains socket, and turn on the instrument. Set the rotation at 20 RPM, put the glassware in a vacuum, and measure the current indicated by the tester. The current must be less than 1.3A. If you wish to change the seal load, follow these instructions: Detach the chiller from the instrument by unscrewing the ring nut. Loosen the two screws shown in the figure that fasten the flange. If you wish to increase the load (thus increase the vacuum seal load and consequently the current needed for rotation), tighten by a few degrees the threaded cylinder for the load and tighten the two screws shown in the figure that fasten the flange.
	If the rotation is irregular, but either visually or by measuring the current points of greater friction are detected, make the seal surface even by applying a disk of 320 sandpaper between the seal and the glass flange, with the abrasive side turned to the side opposite the glass (with the chiller tightened firmly). After this start the rotation at 20 RPM for 5 seconds and, immediately after, do the same thing with 1200 sandpaper for 10 seconds. Remove the sandpaper and check how it runs during rotation, and the vacuum seal. If everything works right, turn off the instrument, disconnect the power, remove the motor current tester, reconnect the motor power cable to the power supply board, and close up everything as described in paragraph 4.2.




4.27 VACUUM SEAL REPLACEMENT

	Disconnect the instrument from the power socket. Detach the chiller from the instrument by unscrewing the ring nut. Remove the three screws shown in the figure that fasten the flange. Unscrew the vacuum seal by <u>turning it clockwise</u> , being careful about the load spring. Take the new seal, apply PTFE tape over the threading (if necessary), insert the load spring and tighten the seal all the way, <u>turning it counterclockwise</u> . Reassemble the seal lock flange tightening the three screws shown in the figure.
	Check the vacuum seal load as described in the paragraph “CHECKING THE VACUUM SEAL LOAD”


4.28 VAPOR LINE REPLACEMENT

	<p>Disconnect the instrument from the power socket.</p> <p>Unscrew the set screw that prevents the metal ring nut from loosening, push the bottom shown in the figure and unscrew the metal ring nut.</p> <p>Slide the vapor line downward until it is extracted.</p>
	<p>Assemble the new vapor line with the metal ring nut, the spacers and the O-ring. Insert the new vapor line into the instrument, holding down the rotation lock pin. Check the concentricity of the vapor line rotation. If there are excessive oscillations, loosen slightly the ring nut, rotate the vapor line a few degrees with regard to the ring nut, and tighten everything again and recheck the concentricity of the rotation.</p> <p>Tighten the set screw that prevents the metal ring nut from loosening.</p>
	<p>Connect the power cable to the instrument, turn the instrument on and check that the instrument are working properly. If everything is working right, turn off the instrument, disconnect the power cable, and reattach the rear housing as described in paragraph 4.2</p>




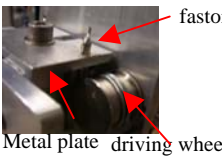

4.29 SEAL O-RING REPLACEMENT

	<p>Disconnect the instrument from the power socket.</p> <p>Unscrew the set screw that prevents the metal ring nut from loosening, push the bottom shown in the figure and unscrew the metal ring nut.</p> <p>Slide the vapor line downward until it is extracted.</p>
	<p>Replace the O-ring and insert the new vapor line into the instrument, holding down the rotation lock pin.</p> <p>Check the concentricity of the vapor line rotation. If there are excessive oscillations, loosen slightly the ring nut, rotate the vapor line a few degrees with regard to the ring nut, and tighten everything again and recheck the concentricity of the rotation.</p> <p>Tighten the set screw that prevents the metal ring nut from loosening.</p>
	<p>Connect the power cable to the instrument, turn the instrument on and check that the instrument are working properly. If everything is working right, turn off the instrument, disconnect the power cable, and reattach the rear housing as described in paragraph 4.2</p>




4.30 LIFTING MOTOR FUSE REPLACEMENT





	Open the instrument following the instructions given in paragraph 4.1. Open the free-hanging fuse holder and replace the fuse with one having the same specifications.
	Connect the instrument power cable, turn the instrument on and check to see that the lifting system is functioning properly. If everything is working right, turn the instrument off, disconnect the power cable, and attach the rear housing as shown in paragraph 4.2.

4.31 LIFTING CORD REPLACEMENT

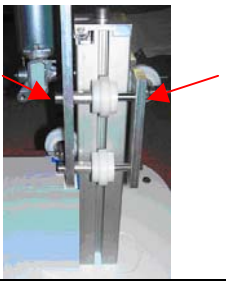


	Open the instrument following the instructions given in paragraph 4.1. Remove the broken cord (cut if necessary). Disassemble the “lifting cord slide” Take a new lifting cord and insert it into the “lifting cord slide” so that the catch of the cord ends up inside the slide.
	Screw in the screw into the slide, inserting the screw in the countersunk hole of the L pillar, having it catch just the first two or three threads.
	Pass the brake wire inside the sliding piece
 faston Metal plate driving wheel	Bring the wire up to the driving wheel for lifting and wrap the wire around it three times clockwise, looking at it from the rear pillar, starting near the lifting plate, without overlapping the wire, having it come out toward the rear pillar. Have the wire come out from the hole on the metal plate and insert a faston without an eye. Using a pliers, pull the wire until it is under tension and tighten the faston having it touch the plate, then apply solder to hold everything. Adjust the tension of the cord with the screw on the outside of the instrument.
	Connect the instrument power cable, turn the instrument on and check to see that the lifting system is functioning properly. If everything is working right, turn the instrument off, disconnect the power cable, and attach the rear housing as shown in paragraph 4.2.

4.32 LIFTING MOTOR REPLACEMENT

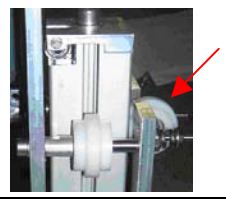

	Open the instrument following the instructions given in paragraph 4.1. Disassemble the lifting cord slide, unscrewing the screw shown in the figure and free the cord from its path.
	Detach the lifting motor by unscrewing the 3 mm nut located at the front part of the instrument. Slip off the driving wheel, pulling it toward the rear part of the instrument, and remove the lifting motor. Be careful of the spacer between the motor and the driving wheel. Be careful of the silicone protective pieces on the motor body, which could fall off.
	Insert the threaded axle of the driving wheel in its place, insert the spacer on the opposite side, put the lifting motor in its position and insert the driving wheel threaded axle inside the hole in the motor. Fasten all with the washer and 3 mm nut. Be careful of the silicone protective pieces on the motor body, which could fall off.

	<p>Make three clockwise wraps around the driving wheel, looking at it from the rear pillar, starting near the lifting plate, without overlapping the wire, so that the cord comes out toward the top in the direction of the rear pillar.</p>
	<p>Pass the brake wire inside the sliding piece</p>
	<p>Screw in the screw into the slide, inserting the screw in the countersunk hole of the L pillar, having it catch just the first two or three threads. Adjust the tension of the cord with the screw on the outside of the instrument.</p>
	<p>Connect the instrument power cable, turn the instrument on and check to see that the lifting system is functioning properly. If everything is working right, turn the instrument off, disconnect the power cable, and attach the rear housing as shown in paragraph 4.2.</p>


4.33 LIFTING GUIDE WHEEL “A” REPLACEMENT


	<p>Open the instrument following the instructions given in paragraph 4.1. Remove “wheel A unit,” unscrewing the two screws on the sides shown in the figure. Install the new “wheel A unit”</p>
	<p>Adjust the play of the lifting mechanism by tightening or loosening the “wheel C” and “wheel B unit”</p>
	<p>Connect the instrument power cable, turn the instrument on and check to see that the lifting system is functioning properly. If everything is working right, turn the instrument off, disconnect the power cable, and attach the rear housing as shown in paragraph 4.2.</p>

4.34 LIFTING GUIDE WHEEL “B” REPLACEMENT




	<p>Open the instrument following the instructions given in paragraph 4.1. Remove “wheel B unit,” unscrewing the two screws on the sides shown in the figure. Install the new “wheel B unit” and tighten the nuts until the lifting system is firm, but without overtightening. Adjust the play of the lifting mechanism by tightening or loosening the “wheel C” and “wheel B unit”</p>
	<p>Connect the instrument power cable, turn the instrument on and check to see that the lifting system is functioning properly. If everything is working right, turn the instrument off, disconnect the power cable, and attach the rear housing as shown in paragraph 4.2.</p>

4.35 LIFTING GUIDE WHEEL “C” REPLACEMENT






	<p>Open the instrument following the instructions given in paragraph 4.1. Remove “wheel C unit,” unscrewing the two screws on the sides shown in the figure. Install the new “wheel C unit” and tighten the nuts until the lifting system is firm, but without overtightening. Adjust the play of the lifting mechanism by tightening or loosening the “wheel C” and</p>
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	“wheel B unit”
	Connect the instrument power cable, turn the instrument on and check to see that the lifting system is functioning properly. If everything is working right, turn the instrument off, disconnect the power cable, and attach the rear housing as shown in paragraph 4.2.





4.36 LIFTING GAS STRUT REPLACEMENT

 	Open the instrument following the instructions given in paragraph 4.1. Remove the gas strut fastener by unscrewing the two side screws shown in the figure and release the lower part of the gas strut. NB: be careful of the pressure exerted by the gas strut. Release the upper part of the gas strut by unscrewing the fastening screw. Install the new gas strut by following in reverse order the steps for removal, making sure that the rod (narrower shaft) is at the top.
	Connect the instrument power cable, turn the instrument on and check to see that the lifting system is functioning properly. If everything is working right, turn the instrument off, disconnect the power cable, and attach the rear housing as shown in paragraph 4.2.

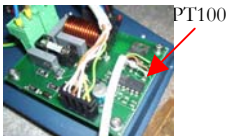

4.37 OPENING THE THERMOSTATIC BATH ASSEMBLY

	Wait until the thermostatic bath has cooled until there is no longer a risk of burns (at least below 50°C). Disconnect the instrument from the power socket. Disconnect the power cable and the “thermostatic bath” control cable. If necessary empty the bath, be careful with hot liquid.
	Set the thermostatic bath assembly on a comfortable work surface, turning it over 180° as shown in the figure. Remove the perforated metal plate by unscrewing the screw in the middle.
	Remove the bottom piece of the thermostatic bath by unscrewing the four screws holding it in place.
 	Delicately lift the bottom piece of the thermostatic bath, turn it over and set it on the external housing as shown in the figure. NB: be very careful of hot surfaces and the electric wires.



4.38 CLOSING THE THERMOSTATIC BATH ASSEMBLY

 	NB: be very careful of hot surfaces and the electric wires. Make sure that there are three flat washers in the threaded spacers, and that the yellow/green grounding wire has been inserted in the remaining spacer.
	Delicately lift the bottom piece of the thermostatic bath, turn it over and put it in its place as shown in the figure, making the four threaded spacers match the holes in the bottom. Fasten all with the four washers and four nuts.
	Insert the perforated metal plate in its place and fasten it with the screw in the middle. Return the thermostatic bath assembly to its place, reconnect the electric cables, and check its operation.


4.39 THERMOSTATIC BATH BOARD REPLACEMENT


	Open the thermostatic bath as described in chapter 4.9 OPENING THE THERMOSTATIC BATH ASSEMBLY.
	<p>Remove the board protective piece by unscrewing the four screws. Disconnect the board connectors, taking note of their positions. Unsolder the wires coming from the PT100 probe. Replace the defective board, removing the four screws in the corners. Solder the wires coming from the PT100 probe to the new board, being careful to follow the previous positions. Connect the connectors to the board, being careful to follow the previous positions. Reattach the board protective piece, using the four screws, passing the PT100 probe and interface wires through the slot.</p>
	<p>NB: be very careful of hot surfaces and electric shocks. Connect the power cable to the instrument, and the thermostatic bath cables. Turn on the instrument and check that the board is functioning properly, checking to see if the temperature shown on the display is in line with the actual temperature of the bath (<i>the probe must then be calibrated</i>), checking the functioning of the heating element. If everything is working properly, turn off the instrument, disconnect the cables, and close up everything as described in chapter 4.10 CLOSING THE THERMOSTATIC BATH ASSEMBLY.</p>

4.40 THERMOSTATIC BATH PT100 REPLACEMENT




	Open the thermostatic bath as described in chapter 4.9 OPENING THE THERMOSTATIC BATH ASSEMBLY.
	<p>Unsolder the connection wires, taking note of their positions. Replace the defective board, removing the nut. Solder the wires onto the new board, making sure to follow the previous positions.</p>
	<p>NB: be very careful of hot surfaces and electric shocks. Connect the power cable to the instrument, and the thermostatic bath cables. Turn on the instrument and check that the board is functioning properly, checking to see if the temperature shown on the display is in line with the actual temperature of the bath (<i>the probe must then be calibrated</i>), checking the functioning of the heating element. If everything is working properly, turn off the instrument, disconnect the cables, and close up everything as described in chapter 4.10 CLOSING THE THERMOSTATIC BATH ASSEMBLY.</p>

4.41 REPLACEMENT OF THERMOSTATIC BATH TANK WITH HEATING ELEMENTS



	Open the thermostatic bath as described in chapter 4.9 OPENING THE THERMOSTATIC BATH ASSEMBLY.
	<p>Disconnect the heating element and bimetallic strip connection cables. Remove the PT100 board from the metal tank. Remove the outside housing. Remove the cooling spacer from the metal tank by unscrewing the three nuts that fasten the spacer to the metal tank. Attach the new metal tank to the spacer, being careful not to mar the coating. Attach the metal tank to the outside housing, making sure that the edge of the outside housing fits perfectly to the edge of the metal tank (<i>insulate it all with high-temperature silicone</i>). Attach the PT100 board to the metal tank. Reconnect the various heating element and bimetallic strip cables.</p>

	<p>NB: be very careful of hot surfaces and electric shocks.</p> <p>Connect the power cable to the instrument, and the thermostatic bath cables.</p> <p>Turn on the instrument and check that the board is functioning properly, checking to see if the temperature shown on the display is in line with the actual temperature of the bath (<i>the probe must then be calibrated</i>), checking the functioning of the heating element. If everything is working properly, turn off the instrument, disconnect the cables, and close up everything as described in chapter 4.10 CLOSING THE THERMOSTATIC BATH ASSEMBLY.</p>
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4.42 THERMOSTATIC BATH TRIAC REPLACEMENT

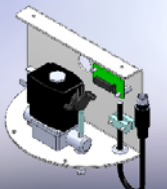

	<p>Open the thermostatic bath as described in chapter 4.9 OPENING THE THERMOSTATIC BATH ASSEMBLY.</p>
 	<p>Unsolder the connection wires, taking note of their positions.</p> <p>Replace the defective board, removing the nuts holding it in place.</p> <p>Solder the wires onto the new board, making sure to follow the previous positions.</p> <p>NB: be very careful about the insulating film placed under the TRIAC.</p>
	<p>NB: be very careful of hot surfaces and electric shocks.</p> <p>Connect the power cable to the instrument, and the thermostatic bath cables.</p> <p>Turn on the instrument and check that the board is functioning properly, checking to see if the temperature shown on the display is in line with the actual temperature of the bath (<i>the probe must then be calibrated</i>), checking the functioning of the heating element. If everything is working properly, turn off the instrument, disconnect the cables, and close up everything as described in chapter 4.10 CLOSING THE THERMOSTATIC BATH ASSEMBLY.</p>

4.43 THERMOSTATIC BATH BIMETALLIC STRIP REPLACEMENT

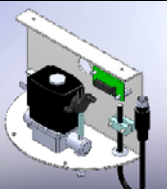

	<p>Open the thermostatic bath as described in chapter 4.9 OPENING THE THERMOSTATIC BATH ASSEMBLY.</p>
	<p>Replace the defective bimetallic strip, removing the nuts holding it in place.</p> <p>Reconnect the electric wires to the new bimetallic strip.</p>
	<p>NB: be very careful of hot surfaces and electric shocks.</p> <p>Connect the power cable to the instrument, and the thermostatic bath cables.</p> <p>Turn on the instrument and check that the board is functioning properly, checking the functioning of the heating element. If everything is working properly, turn off the instrument, disconnect the cables, and close up everything as described in chapter 4.10 CLOSING THE THERMOSTATIC BATH ASSEMBLY.</p>

5 OPTIONAL VACUUM CONTROLLER

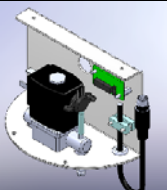

5.1 SENSOR REPLACEMENT

	Disconnect the optional “vacuum controller” from the instrument. Open the optional, removing the outside cover.
	Make a note of the order of the sensor wires. Unsolder the sensor from the wires that connect it to the electronic circuit board. Remove the sensor from the PTFE tube, and insert the new one. NB: Check the vacuum seal of the connection! Solder the new sensor to the wires, and protect the soldering with heat shrink tubing.
	Connect the optional “vacuum controller” to the instrument, and check its functioning (maintaining the vacuum, regulation of the vacuum). Remove the optional “vacuum controller” from the instrument, close the “vacuum controller,” replacing the outside cover.

5.2 SOLENOID VALVE REPLACEMENT

	Disconnect the optional “vacuum controller” from the instrument. Open the optional, removing the outside cover.
	Pull the PTFE tube out from the metal couplings. Remove the solenoid valve from the chassis by unscrewing the screws. Remove the couplings from the damaged solenoid valve and connect them to the new valve. Reconnect the PTFE tube and connect the vacuum sensor. NB: Check the vacuum seal of all the connections!
	Connect the optional “vacuum controller” to the instrument, and check its functioning (maintaining the vacuum, regulation of the vacuum). Remove the optional “vacuum controller” from the instrument, close the “vacuum controller,” replacing the outside cover.

5.3 ELECTRONIC CIRCUIT BOARD REPLACEMENT


	Disconnect the optional “vacuum controller” from the instrument. Open the optional, removing the outside cover.
	Make a note of the connection order of the sensor wires to the electronic circuit board, and the connection order of the external connector wires to the electronic circuit board. Unsolder all the wires from the electronic circuit board, and solder them to the new board.
	Connect the optional “vacuum controller” to the instrument, and check its functioning (maintaining the vacuum, regulation of the vacuum). Remove the optional “vacuum controller” from the instrument, close the “vacuum controller,” replacing the outside cover.

6 PROBE CALIBRATIONS AND UPGRADES

6.1 TOUCH SCREEN CALIBRATION

	<p>Enter the calibrations screen following the procedure indicated below:</p> <p>Press the “SET” key on the display</p> <p>Press the “TOUCH SCREEN CALIBRATION” key on the display</p> <p>Enter the password “1234567” and press the “OK” key</p> <p>Follow the instructions on the display (press with fingertip or with what is used for the touch screen at the center of the various crosses).</p> <p>Repeat the procedure again if necessary.</p>
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6.2 THERMOSTATIC BATH TEMPERATURE PROBE CALIBRATION

	<p>Fill the instrument’s tank with 4 liters of deionized or distilled water.</p> <p>Enter the calibrations screen following the procedure indicated below:</p> <ol style="list-style-type: none"> Press the “SET” key on the display Press the “SYSTEM CALIBRATION” key on the display Enter the password “1234567” and press the “OK” key Press the “Bath” key On the “THERMOSTATIC BATH TEMPERATURE AT 35°C” screen press the “OK” key Wait until the instrument reaches the temperature of 35°C (first measurement point). Having reached this temperature, measure the water temperature with a certified thermometer (to improve the quality of the measurement bring the thermometer probe near to the wall of the tank about three centimeters from the bottom, as shown in the figure), and enter the value of the delta obtained from the formula (DISPLAY TEMP – THERMOMETER TEMP) in the box under that of the value read. Repeat the formula and any adjustments until the difference between the two falls within a range of more or less 0.5°C, then press the ENTER key. <p>Wait until the instrument reaches the temperature of 85°C and repeat the same procedure carried out at point v.)</p>

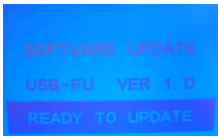
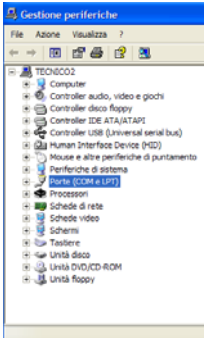

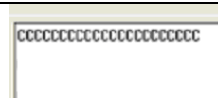
6.3 VAPOR TEMPERATURE PROBE CALIBRATION

	Take two containers with warm/hot water at 35°C and 85°C, or as an alternative use the instrument thermostatic bath.
	Take the readings of the two samples, noting the error between the thermometer reading and the instrument reading.
	<p>Enter the calibrations screen following the procedure indicated below:</p> <ol style="list-style-type: none"> Press the “SET” key on the display Press the “SYSTEM CALIBRATION” key on the display Enter the password “1234567” and press the “OK” key Press the “FUMES” key <p>A screen appears in which the error between the instrument reading and the thermometer reading can be entered for the two sets of 35°C and 85°C. enter the two errors calculated previously, confirm, and repeat the readings to check the results of the calibration.</p>

6.4 PRESSURE PROBE CALIBRATION

	Connect the vacuum control optional and a vacuum pump to the instrument.
	Bring the vacuum to 50mBar and then to 950mBar, making a note of the error between the instrument reading and the vacuum gauge reading.
	<p>Enter the calibrations screen following the procedure indicated below:</p> <p>i.) Press the “SET” key on the display</p> <p>ii.) Press the “SYSTEM CALIBRATION” key on the display</p> <p>iii.) Enter the password “1234567” and press the “OK” key</p> <p>iv.) Press the “VACUUM” key</p> <p>A screen appears in which the error between the STRIKE300 reading and the certificated instrument reading can be entered for the two sets of 50mBar e 950mBar. Enter the two errors calculated previously, confirm, and repeat the readings to check the results of the calibration.</p>

6.5 FIRMWARE UPGRADE

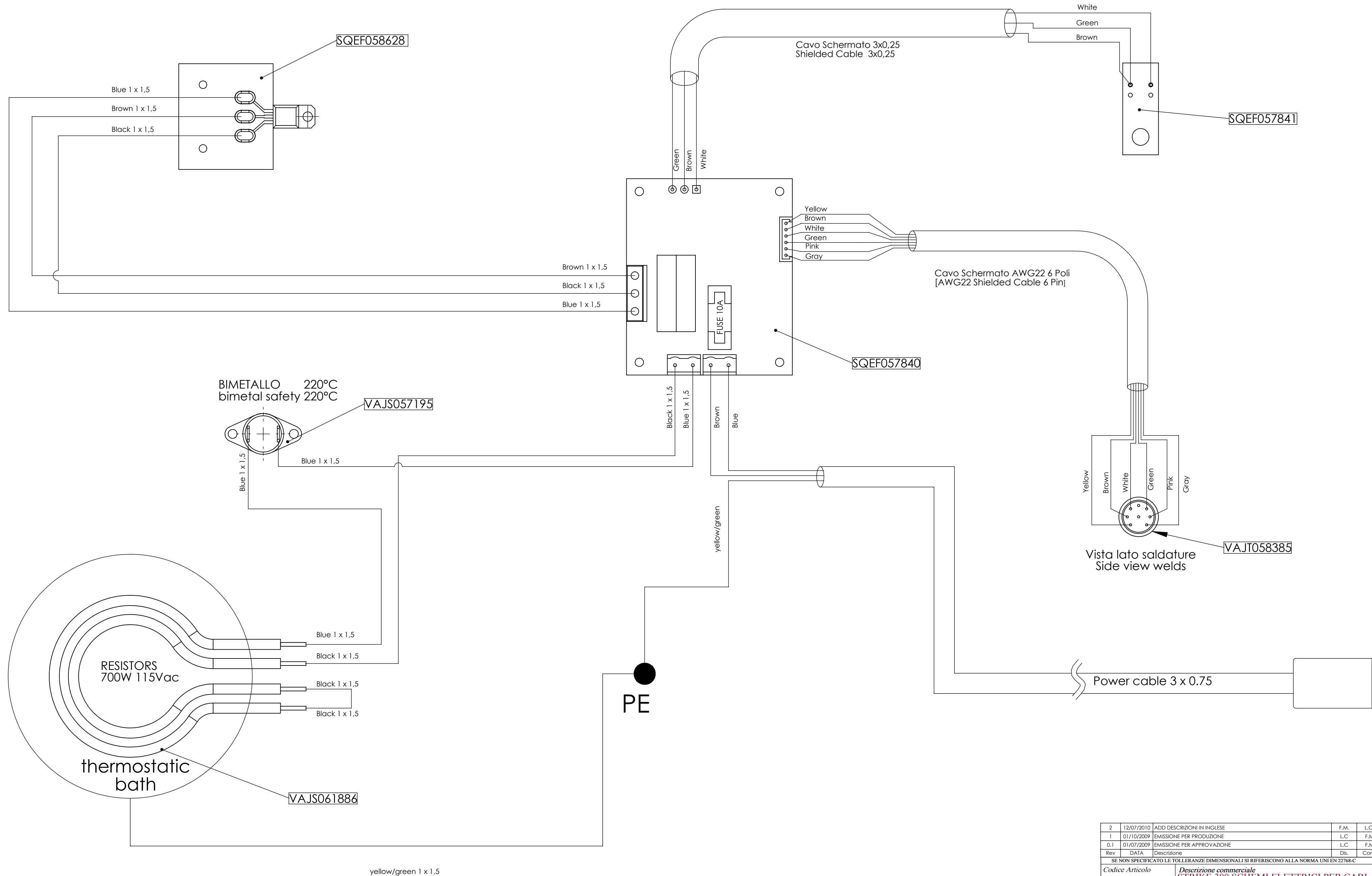
	<p>Connect the instrument to a PC with a USB cable.</p> <p>Turn on the instrument with the switch and at the same time turn the encoder knob to the right to put the instrument into programming mode.</p>
	<p>On the PC open the “HYPERTERMINAL DOWNLOAD300” program and select the COM port for the instrument.</p> <p>If necessary check the COM port number associated with the instrument by means of “System properties/Hardware/peripherals management”</p>
	<p>Start the communication using the icon shown in the figure.</p>
	<p>If everything is properly set the PC display will show the characters “C” shown in the figure as evidence of a good connection.</p>
	<p>Click on “TRANSFER” and then on “SEND FILE” and with “SCAN” select the firmware to be installed, then click on “SEND” and the transfer window opens.</p> <p>When the transfer is completed, if everything has gone right, “UPGRADE Successful Complete !” appears on the PC monitor.</p> <p>Turn the instrument off and turn it back on and check the release of the firmware on the welcome screen.</p>

7 APPENDICES

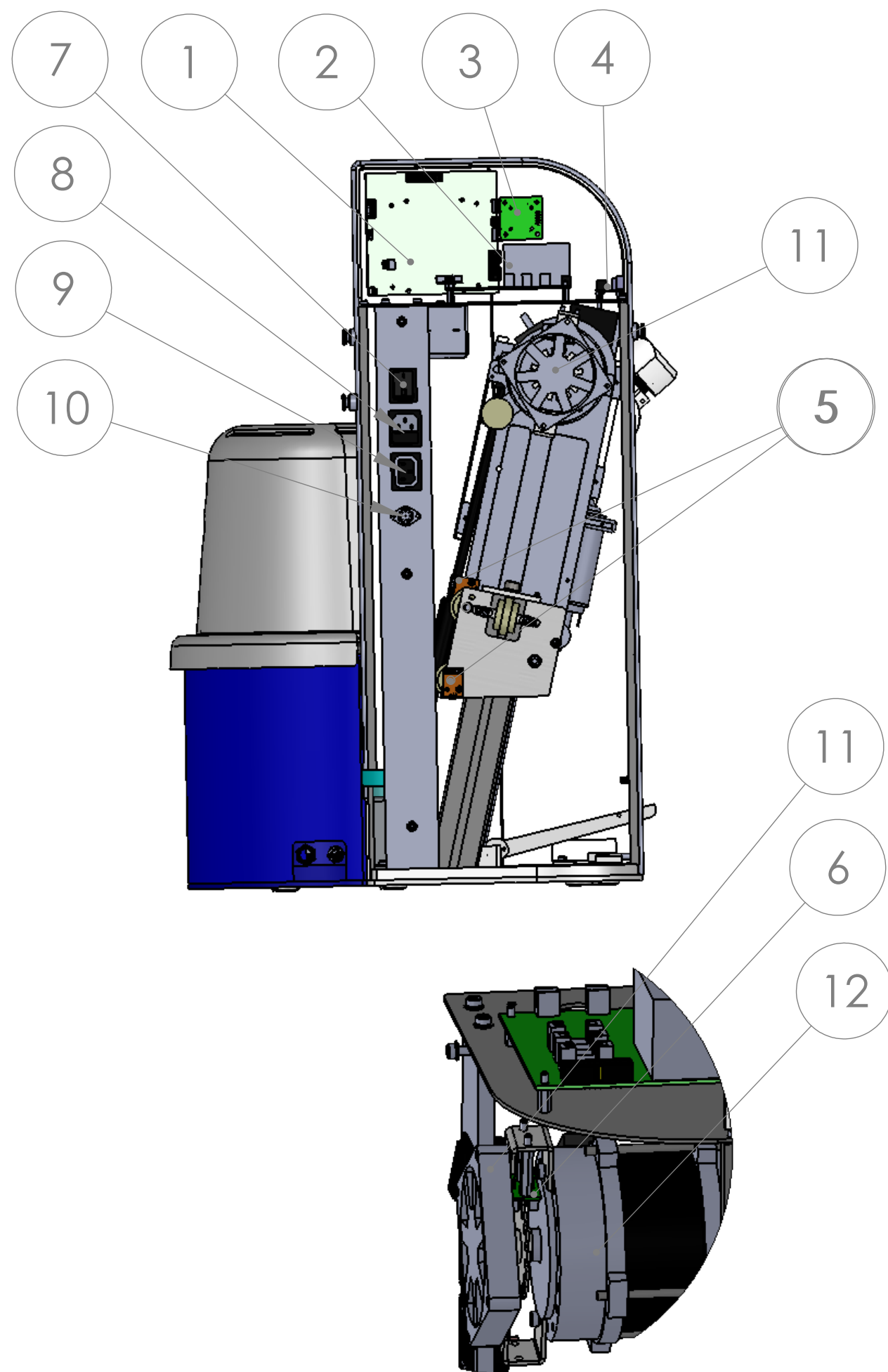
7.1 ELECTRICAL WIRING DIAGRAMS KC7012

7.2 STRIKE300 SPARE PARTS KC7824



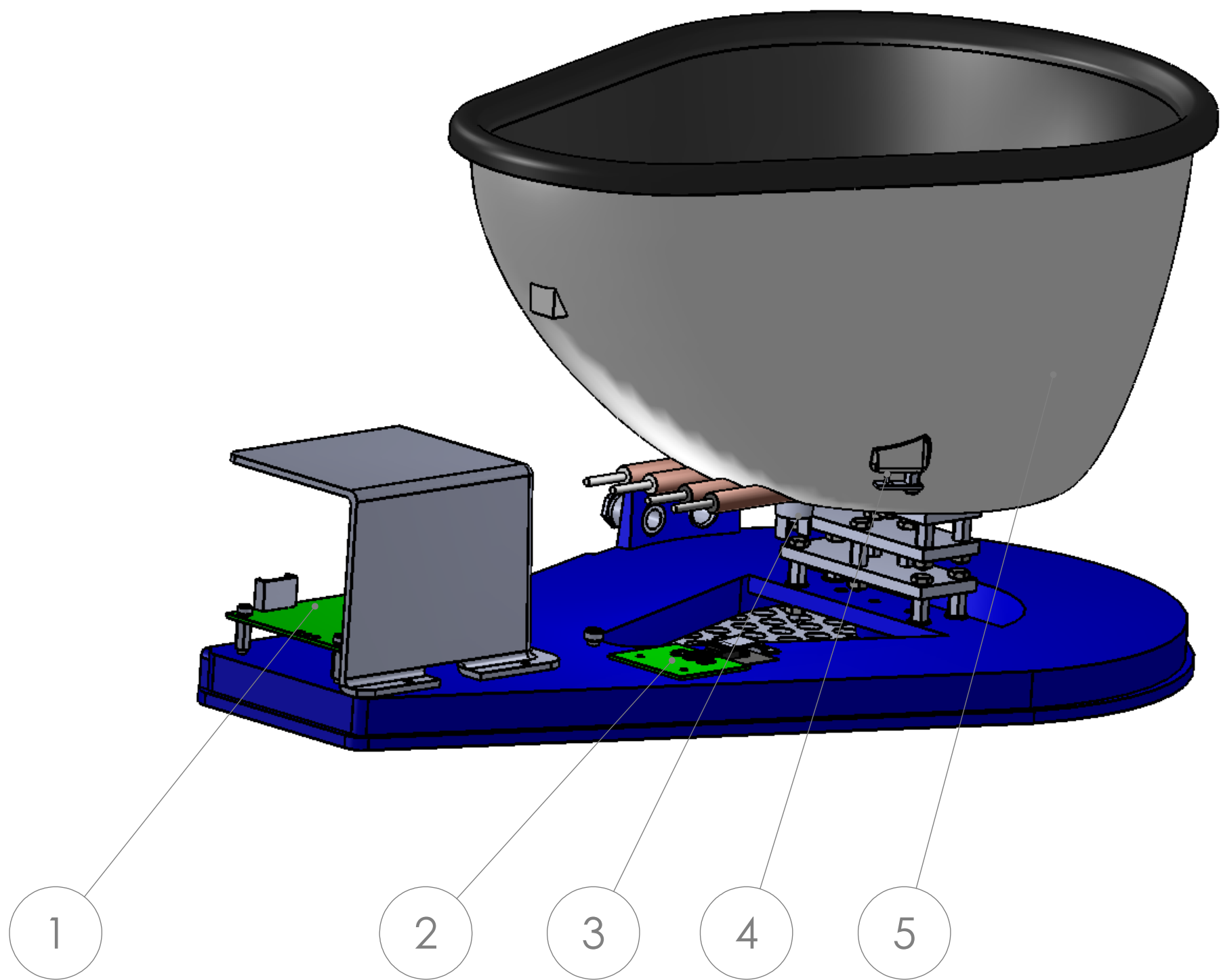


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0.1	01/07/2009	EMISSIONE PER APPROVAZIONE	L.C.	F.M.	R.C.
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<div></div> <div>DIVISIONE STRUMENTI</div> <div>Via Romano di Sopra, 2/C - 06132 - S. Martino in Campo Perugia - Tel. 075/609091 (6 linee r.a.) - Fax 075/6090950</div>		Rif. Commessa			
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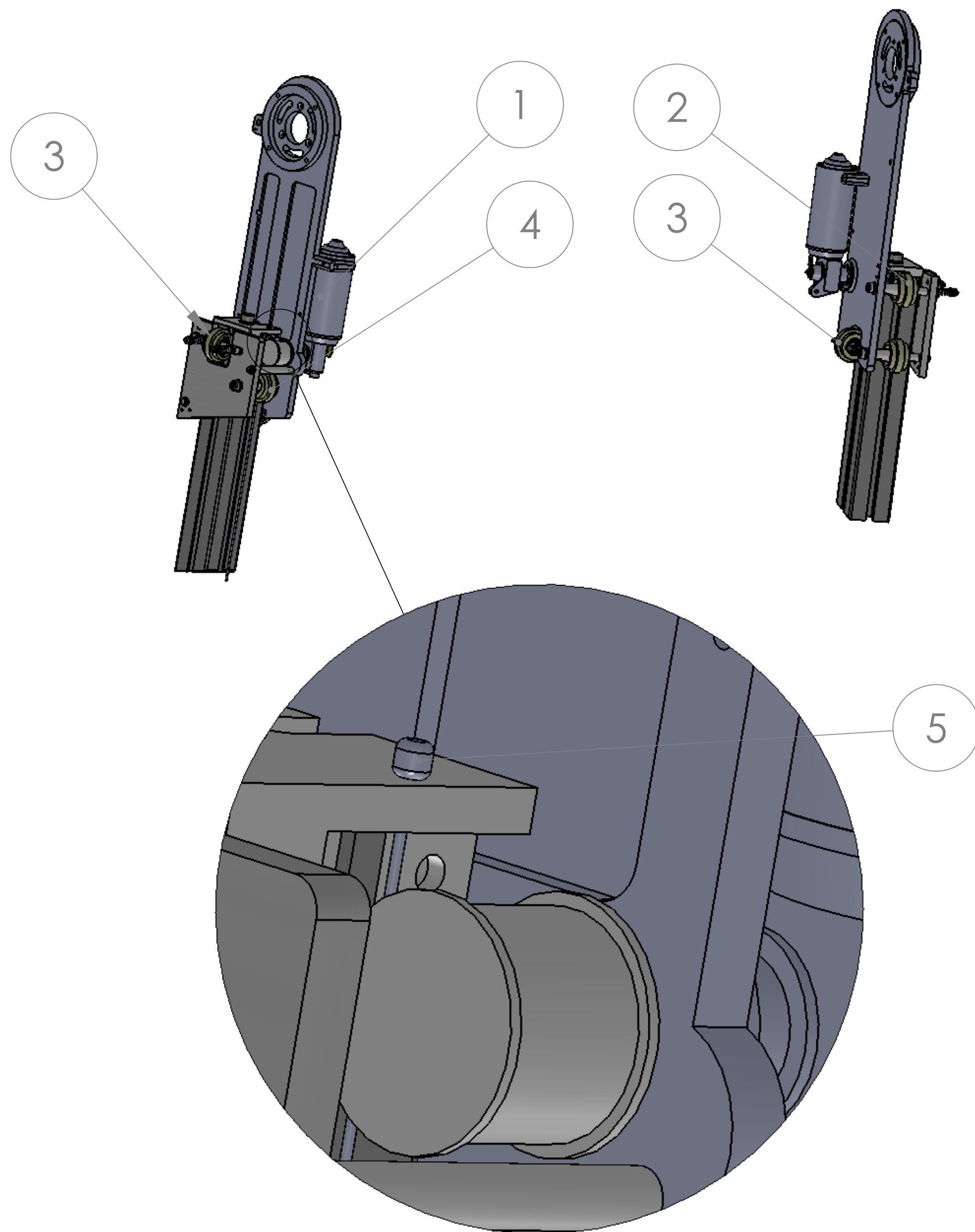
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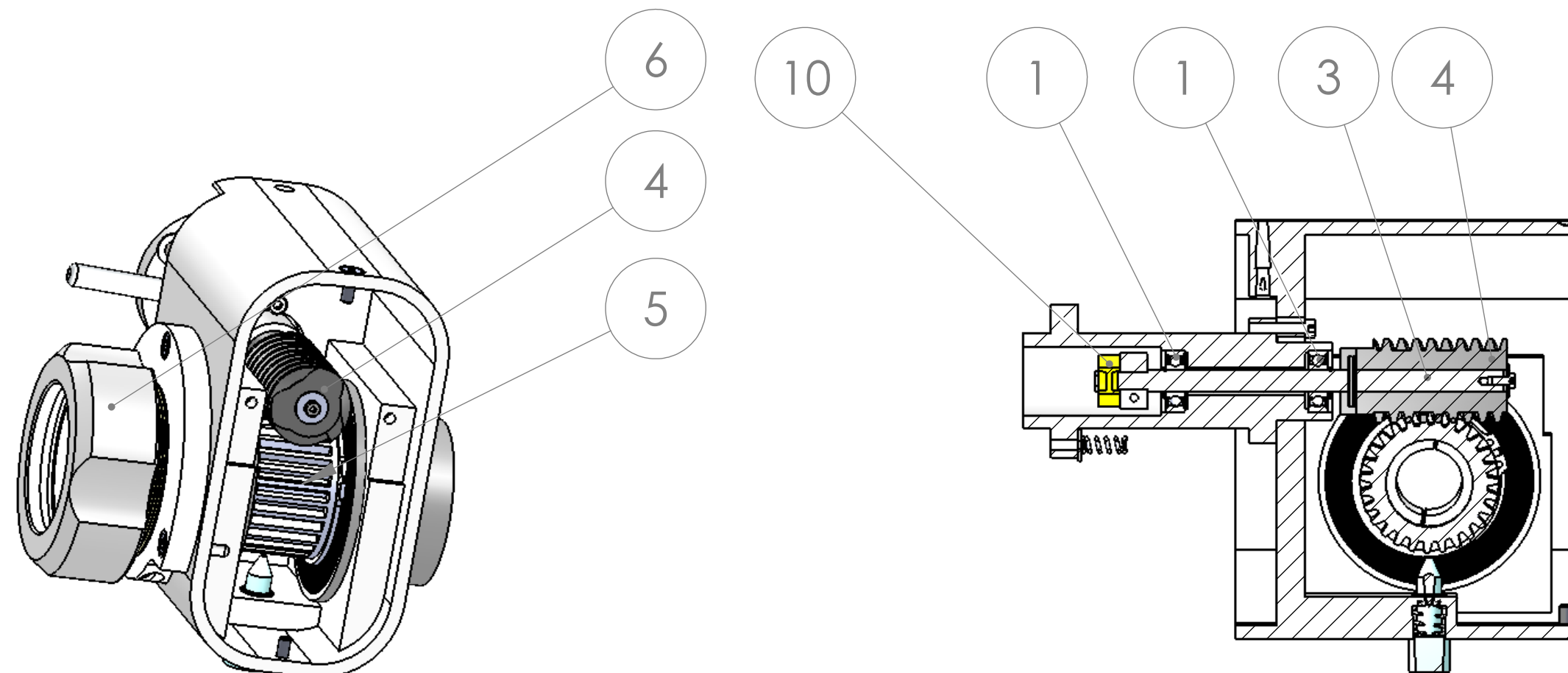
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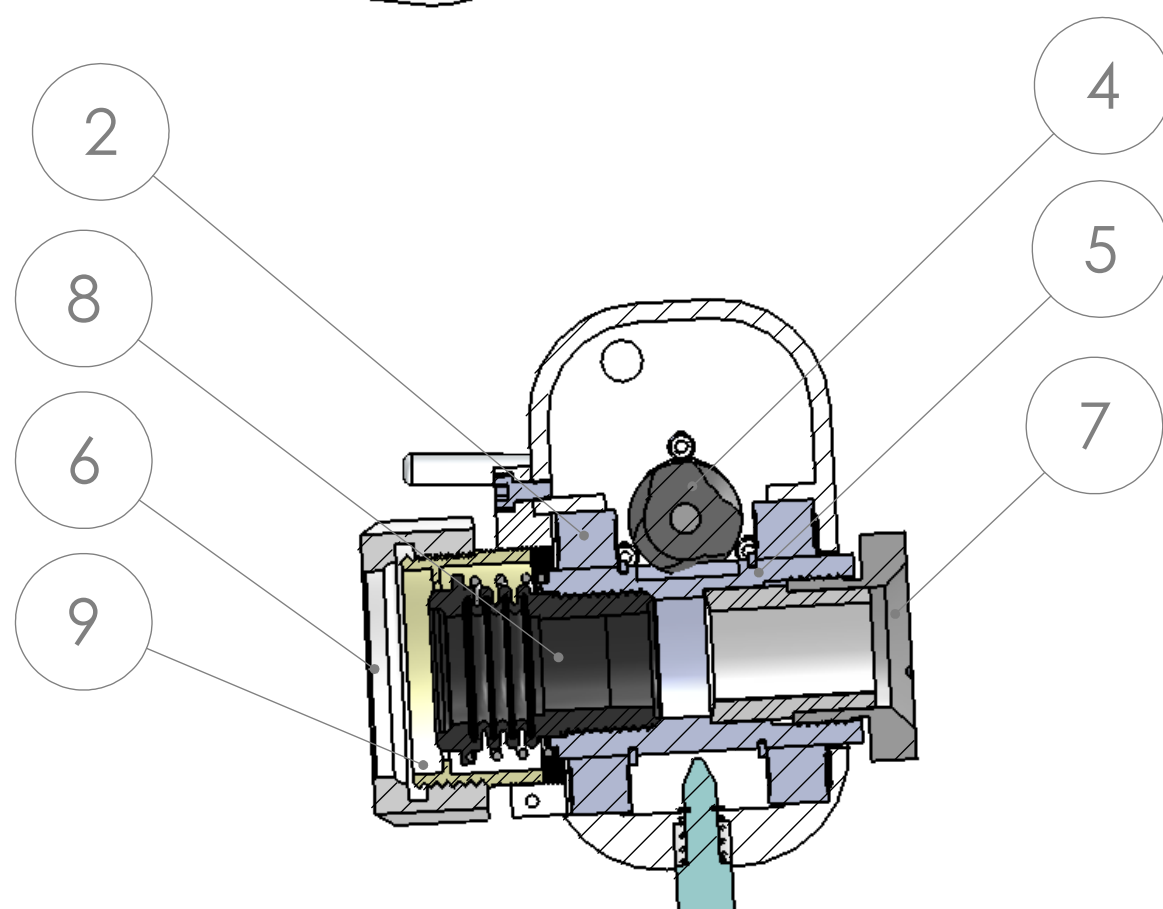


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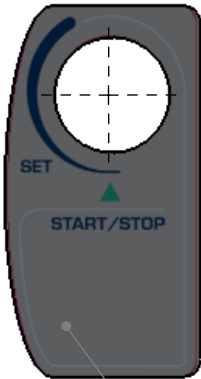
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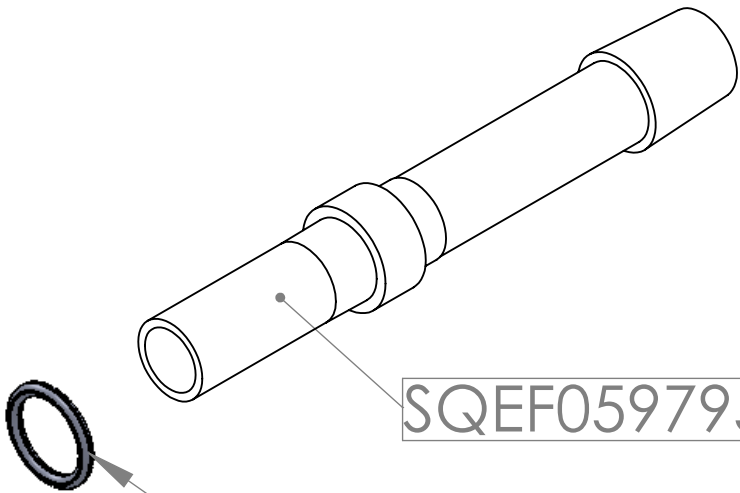
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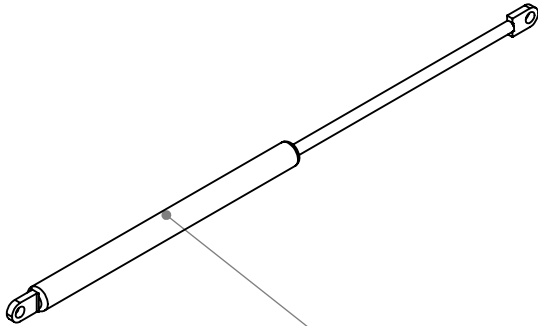


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